



915 Main Street, Evansville, Indiana 47708

TEL 317.547.5580 FAX 317.543.0270

[www.structurepoint.com](http://www.structurepoint.com)

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## Addendum No. 2

**Project Name:** Perry Heights Middle School Gymnasium Addition  
**Project Number:** 2009.00503  
**Date:** 08/02/2013

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### **OWNER:**

Evansville Vanderburgh School Corporation  
951 Walnut Street  
Evansville, IN 47713

### **ARCHITECT / STRUCTURAL ENGINEER / CIVIL ENGINEER**

American Structurepoint, Inc.  
915 Main Street  
Evansville, Indiana 47708  
317.547.5580

### **MECHANICAL / PLUMBING / ELECTRICAL / FIRE PROTECTION ENGINEER**

PCI Skanska  
112 Ingle Street  
Evansville, IN 47708  
812.425.4264

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This Addendum forms part of the Contract Documents for the Project and contains clarifications and revisions to the Contract Documents.

The information contained herein modifies the original Bidding Documents and all prior Addenda as applicable. Requirements of the original Bidding Documents and previous Addenda remain in effect except as modified by this Addendum.

Bidders must acknowledge receipt of this Addendum on the Bid form. Failure to acknowledge receipt of this Addendum may subject Bidder to disqualification.

The extent of this addendum is as follows:

#### **DOCUMENT MODIFICATIONS**

##### **PRE-BID MEETING**

1. Introduced design team and Owner's representatives.
2. Owner discussed tobacco and alcohol policy and requirement for background check and photo ID for personnel on-site.
3. It was noted that the retaining wall shown adjacent to the new drive on Sheet 2.1 refers to Architectural Plans for Details. Details for this wall will be part of Addendum No. 03.
4. Question was raised regarding last date to submit questions. The last date for questions will be Friday, August 9. The final Addendum, if required, will be issued Tuesday, August 13.
5. Reiterated requirement for all contractors, including subs, to be licensed in accordance with article A30 in Section 000100 EVSC Procurement and Contracting Requirements.
6. Toured site, including 480V panel and gas service location.

##### **PROJECT MANUAL**

1. Section 03 45 00 - Precast Architectural Concrete
  - a. Under paragraph 2.1; add "B. Pre-approved Fabricator. 1. Coreslab Structures (Indianapolis) Inc."
2. Section 07 21 29 – Spray-on Thermal and Acoustical Insulation
  - a. Under paragraph 2.2 Manufacturers; add "Monoglass Spray-on Insulation".
3. Section 08 71 00 – Door Hardware
  - a. Under paragraph 2.7.A.3.b; Change to read "Key new locks into Owner's existing keying system."
  - b. Under paragraph 3.6; add "8. BA – Best Access Systems".
  - c. Under 3.6 Hardware Schedule, Set 2.0; add to Doors: "21".
  - d. Under 3.6 Hardware Schedule, Set 5.0 and Set 8.0; change the Storeroom Lock number to 45H7D16R.
  - e. Under 3.6 Hardware Schedule, Set 6.0; change the Privacy Lock number to 45H7L16R.
4. Section 09 64 66 – Wood Athletic Flooring
  - a. Under paragraph 2.1 Manufacturers, A.; add "4. Action Floor Systems."
5. Section 10 21 13 – Toilet Compartments
  - a. Under 1.4, B.1.; change Flame Spread requirement to read "Class B - 26-75".
  - b. Under 2.1 Materials; delete H. and I.
  - c. Under 2.2, A.; Change "1180 Series" to "1080 Series"
  - d. Under 2.2, E., 1.; change "aluminum" to "Type 304 stainless steel".
  - e. Under 2.3 Accessories, 1.; Add before Stainless steel, "Type 304".
6. Section 102800 – Toilet, Bath, and Laundry Accessories
  - a. Under 2.2, A. and 2.3, A.; add "5. Gamco, Div. of Bobrick."
7. Section 12 48 00 – Entrance Floor Mats and Frames
  - a. Under paragraph 2.1 Manufacturers, A.1. Roll-up Aluminum Rail Hinged Mats; add "d. KDCM Aluminum Rollout Mat"
8. Section 11 66 23 – Gymnasium Equipment
  - a. Under paragraphs 2.2, 2.3, and 2.4; add the following as acceptable manufacturers:
    - 1) "Performance Sports Systems, Noblesville, IN"

- 2) "Porter Athletic Equipment"
- 3) "ADP Lemco, Inc."
9. Section 11 66 43 – Scoreboard and Console
  - a. Under paragraph 2.3, B., 6., h.; revise to read "Provide battery pack."
10. Section 27 51 23.50 – Communication System School and Commercial Construction Performance Specification for the school-wide Intercom System
  - a. Replace with attached revised section.
  - b. Under 1.1, B.; no other equipment suppliers have been approved for this project.
  - c. All existing intercom equipment and cabling is to be replaced; Contractor shall field verify quantities and locations.
11. Section 27 51 16 – Public Address and Mass Notification Systems for the Gymnasium PA System
  - a. Replace with attached revised section.

**DRAWINGS**

1. Sheet C4.1 – Grading Plan
  - a. Delete note pointing to sidewalk at the southeast corner of the existing building near the Match Line that reads "HANDRAIL REQUIRED (REFER TO ARCHITECTURAL PLANS FOR DETAILS)".
2. Sheet A3.2:
  - a. In Wall Section 2/A3.2; change the T/CONC elevation from 108'-8" to
3. Sheet A4.1:
  - a. Under Lower Level Door Schedule; add under Remarks at bottom of schedule:
    - 1) "1. INSTALL FIRE-RATED WIRED GLASS VISION LITE."
    - 2) "2. INSTALL NON-RATED TEMPERED SAFETY GLASS VISION LITE."
  - b. Under Upper Level Door Schedule; add under Remarks at bottom of schedule:
    - 1) "1. INSTALL FIRE-RATED WIRED GLASS VISION LITE."
  - c. Under Lower Level Door Schedule, under REMARKS; add note "1" to openings 02A and 21.
  - d. Under Lower Level Door Schedule, under REMARKS; add note "2" to opening 02B.
  - e. Under Upper Level Door Schedule, under REMARKS; add note "1" to opening 101.
4. Sheet E-004 – Electrical Site Plan
  - a. Replace Sheet E-004 with the attached revised sheet.
5. Sheet E-601 – Light Fixture Equipment and Panel Schedules
  - a. Replace Sheet E-601 with the attached revised sheet.

**ATTACHMENTS**

1. Pre-Bid Meeting Sign-in Sheet
2. Section 27 51 16 – Public Address and Mass Notification Systems
3. Section 27 51 23.50 – Communication System School and Commercial
4. Sheet A4.1A
5. Sheet E-004
6. Sheet E-601

END OF ADDENDUM



915 Main Street, Evansville, Indiana 47708  
7260 Shadeland Station, Indianapolis, Indiana 46256  
TEL 317.547.5580 FAX 317.543.0270  
[www.structurepoint.com](http://www.structurepoint.com)

## Sign In Sheet – Pre-bid Meeting

Project Name: EVSC Perry Heights Middle School Gymnasium Addition  
Project Number: 2009.00503  
Date: 07/30/2013

PLEASE PRINT LEGIBLY

NAME	COMPANY	E-MAIL	PHONE
Fred Fackenthal	American Structurepoint	ffackenthal@structurepoint.com	317-547-5580
Tyler Price	American Structurepoint	tprice@structurepoint.com	812-454-8616
Stephen Dickinson	Dickinson Cr Services	stephen@doxservices	270-860-6100
Ashley Pastore	PCI Skanska	ashley.pastore@skanska.com	812-456-7122
John Shea	PCI Skanska	john.shea@skanska.com	456-7028
Ryan Richardson	PCI Skanska	Ryan.Richardson@skanska.com	456-7029
DAVID RALEIGH	SUPERIOR CONCRETE	david.r@superiorconcreteco.com	422-6914
MATT BISHOP	EMPIRE	M.Bishop@empire-contractors.com	4124-3905
Doug Demoss	SRIAMBAUGH & SON - ASG	oldemosse@dvsysgrp.com	812-264-5855
TYLER ALMON	DANCO CONSTRUCTION, INC	talmon@danco-const.com	812-479-7000
NATHAN WILDEMAN	DETIG BROS	NATHAN@DETIGBROS.com	812-423-4201
JASON McDONALD	PEYRONNIN CONST., MECH	jasonm@peyronnin.com	812-423-6241
Dale Chandler	PPMI Construction	dchandler@ppmi.construction.com	812-425-5005
ROBERT POPE	PPMI CONSTRUCTION	RPOPE@PPMI CONSTRUCTION.COM	483-9126
PAT Tuley	EVSC	Pat.Tuley@EVSC.K12.IN.US	431-8426
Roger Lekunca	--		589-0331
Darryl Angermair	EVSC	darryl.angermair@EVSC.K12.IN.US	435-8337
Mike McKim	EVSC	mike.mckim@EVSC.K12.IN.US	435-8337
Matt Funkhauser	CCS	Matthewfunkhauser@gmail.com	812-760-4603
Peter Tullis	CCS	ptullisccs@gmail.com	812-426-2603

**SECTION 275123.50 - COMMUNICATION SYSTEM SCHOOL AND COMMERCIAL CONSTRUCTION PERFORMANCE SPECIFICATION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. The Contractor shall furnish and install all equipment including, but not limited to, outlet boxes, conduit (with pull strings), wiring, telephones, annunciators, speakers, and microphones as shown on the plans, and all other equipment necessary to provide a complete and operating system for the Perry Heights Gym Addition Project.
- B. Equipment supplied by Valcom, Atlas Sound, Lowell, Quam-Nichols, Shure, Crown, and WPW shall be considered as meeting these specifications and as the base bid. The specifying authority must approve any alternate system. Bidders supplying an alternate system must make the authority aware of their intentions and provide adequate information, including catalog cuts, working and shop drawings, and a demonstration of the proposed system at least 10 days prior to bid date. Any prior approval of an alternate system does not exempt the supplier from meeting the intent of these specifications. If the alternate system fails to provide all the requirements specified in this document, the Contractor shall be responsible for all costs associated with the removal and replacement of said equipment.
- C. The Communication system shall provide distribution of intercom, overhead paging, emergency paging, class change time tones, emergency tone and program material.

**1.2 SUBMITTALS**

- A. Data sheets shall be provided on all equipment being provided.
- B. Internal control cabinet drawings showing internal block diagram connections shall be provided.
- C. Wiring diagrams showing typical field wiring connections shall be provided.
- D. FCC registration number shall be provided.

**1.3 QUALIFICATIONS**

- A. The Contractor shall be from an established and locally run business which has been operating in the area for a minimum of five years.
- B. The Contractor shall show evidence that he maintains a service organization and parts inventory to adequately support the supplied equipment.

#### **1.4 MAINTENANCE SERVICE**

- A. The Contractor shall provide a one-year guarantee of the installed system against defects in material and workmanship. All labor and materials shall be provided at no expense to the Owner. Guarantee period shall begin on the date of acceptance by the Owner or engineer.
- B. A maintenance contract offering continued factory authorized service of this system shall be made available if requested by the Owner.

#### **QUALITY ASSURANCE**

- 1.10 The Contractor shall currently maintain a locally run business for a minimum of five years and shall be an authorized distributor of the supplied equipment with full warranty privileges.
- 1.11 The supplying Contractor shall have attended the manufacturer's installation and service school.
- 1.12 The Contractor shall furnish manufacturer's manuals of the completed system including individual specification sheets, schematics, inter-panel and intra-panel wiring diagrams. In addition, all information necessary for the proper operation of the system must be included. Any bidder using other than the specified equipment must provide this information prior to bidding.
- 1.13 As built drawings that include any changes to wiring, wiring designations, junction box labeling and any other pertinent information shall be supplied upon completion of project.

#### **IN SERVICE TRAINING**

- 1.15 The Contractor shall furnish a minimum of four hours of in service training with the system. These sessions shall be broken into segments that will facilitate the training of individuals in operating station equipment, administrative devices, user programming functions, and program distribution equipment. Operating manuals and users guides shall be provided at the time of the training.
- 1.16 The contractor shall provide subsequent trainings as requested by the owner for the first year free of charge.

#### **WIRING**

- 1.16 System wiring shall be in accordance with good engineering practices as established by the EIA and NEC. Wiring shall meet all established state and local electrical codes. All wiring shall test free from grounds and shorts.

## PART 2 PRODUCTS

- 2.0 The installation shall include a comprehensive programmable microprocessor based communications system consisting of a central switching exchange capable of handling up to 360 remote stations.
- 2.1 All programmable functions shall be stored in non-volatile memory to prevent loss during a power failure condition.
- 2.2 System shall have provisions for battery back up and charger specifically designed for use with system power supplies. Systems that use an uninterruptible AC power supply (UPS) must be pre-approved.
- 2.3 The central switch shall utilize standard dual tone multi-frequency type decoding (DTMF) for conformance with standard telephone practices.
- 2.4 The central switch shall provide a LAN/WAN connection via a standard Ethernet RJ-45 jack to provide on or off site programming and or diagnostics. It shall be possible for the user with a computer connected to the LAN/WAN to access and change all system parameters as necessary and to save complete system architecture on its storage medium. It shall also be possible to run diagnostic software to isolate and correct faults in the system. These capabilities must also be provided thru a standard RS232 port for local access.
- 2.5 The system shall be provided with four (4) multifunction ports for connection of administrative phones, any loop start trunk (LST) port of a KEY or PBX telephone system. All communication between administrative phones shall be non-blocking. Provide a minimum of one LST port interface as part of this basic specification.
- 2.6 The system shall have the ability to be connected to a 10/100 switched, multicast enabled network. This connection shall be via a standard Ethernet RJ-45 jack and shall provide all system functionality across the LAN/WAN to remote cabinets eliminating the need for individual peripherals to be wired back to the main switch. All devices connected to these remote shelves shall provide the same capabilities as those connected directly to the MDF.
- 2.7 Provide a one (1) watt amplifier circuit for each remote station to allow absolute flexibility for simultaneous paging, program distribution and time tone schedules. Equipment requiring a single power amp for these functions shall size such an amp as to deliver a minimum of (1.5) watt per station to compensate for inherent transformer losses. Additional power will be required for hallway speakers, outside horns and common areas.
- 2.8 Facilities for a directly connected RS232 printer output to create a log of system activity. System activity logging and reporting shall also be delivered through the RJ-45 jack to be distributed across a LAN.
- 2.9 Capabilities of zoning incoming calls from any staff station location to any of four (4) multifunction ports.

- 2.10 Four (4) telephonic links between DTMF telephone locations.
- 2.11 Eight (8) unrestricted audio paths for private communication between administrative phones, administrative phones and staff stations, program distribution or time tone distribution and paging. The system must be able to perform multiple pages to different zones, class change tones and music distribution simultaneously. A minimum of four (4) simultaneous live voice pages while leaving four (4) additional paths for music and/or class change tones can be supported. Systems that cannot support a minimum of three (3) live pages and one (1) program distribution channel simultaneously will not be accepted.
- 2.12 Provide one (1) direct dialing, two-way voice amplified intercom link with automatic gain control for every twenty-four stations allowing multiple open voice conversations simultaneously.
- 2.13 Provide eight (8) separate time-tone schedules with a minimum of 1024 events. Individual events of each schedule shall be capable of sounding one of nine user defined tone types or custom messages from a customer programmed voice chip. These schedules can be run individually or simultaneously.
- 2.14 Eight (8) internal relays which can be controlled manually from any administrative phone or controlled automatically via an optional integral Master Time Control Center.
- 2.15 Provide (8) eight door release outputs for remote door lock control.
- 2.16 Program distribution of three (3) audio program sources simultaneously to any one or group of staff stations. Typical audio program sources can include:
  - 2.16.1 AM/FM Digital Tuner
  - 2.16.2 Cassette Deck
  - 2.16.3 CD Player
  - 2.16.4 AM/FM CD Combination Player
- 2.17 Seventy-Two (72) paging zones and a dial on the fly group with two (2) priority levels of all call capability. Paging into any one zone shall not interrupt any program(s) previously distributed. If the areas receiving program are part of the page zone the program shall be interrupted during the page and returned automatically when the page is completed. Each group shall be able to have a custom name assigned to it simplifying programming of multiple groups of speakers.
- 2.18 Nine (9) built in software definable signaling tones. A voice chip with the option for a male or female voice, which can be used to store custom messages, labels for rooms and custom emergency tones. Voice announcements can be automatically or manually at any time.

- 2.19 Two (2), three (3) or four (4) digit programmable architectural room numbers for administrative and staff station locations.
- 2.20 Integral internal program clock for time tone distribution and other time related functions. It shall be possible to synchronize the program clock from an external master clock. The program clock can be used to control standard Sync wired clocks and Digital clocks with the addition of an optional Master Clock Board.
- 2.21 The system shall be provided with voice-synthesized call-in, which provides any administrative telephone audible annunciation of the calling parties location and architectural room number.
- 2.22 Enhanced Caller I.D. information for use with all administrative phones. It shall be possible to deliver industry standard enhanced Caller I.D. information to any third party phone system providing seamless annunciation of room numbers and operation between systems.
- 2.23 Discriminating ringing to distinguish different levels of incoming calls.
- 2.24 Selective pre announce tones: a) Single chime-Page b) Dual chime-Intercom call c) or a custom tone.
- 2.25 Call confirmation tone at the intercom speaker location when a call is placed. This tone verifies that the call has been placed into the system queue. A second confirmation tone shall be activated if the call is upgraded to an emergency call (See 2.31.3). Equipment, which does not notify the caller that the system has accepted the upgraded call, will not be accepted.
- 2.26 Unanswered emergency calls shall, after a user-determined time, have their architectural room number automatically announced over any one or group of speakers. This automatic page notifies nearby staff of an unanswered emergency condition and ensures staff notification of the emergency situation.
- 2.27 The administrative telephone shall be a standard DTMF set. Any system requiring a "smart" or proprietary type instrument will not be acceptable. The administrative phone may be equipped with an optional 4 x 20 LCD display for visual display of incoming calls. The following features will be provided by the administrative telephone:
  - 2.27.1 Three levels of system access:
    - a. Level 1 - Dialing of any administrative or speaker station, all call, emergency all call, zone paging, scroll/erase call waiting queue, transfer and conference.
    - b. Level 2 - Same as Level 1 with select and distribute program capabilities, set/reset alarm and relay functions.

- c. Level 3 - Same as Level 2 plus the capability to bump or join a conversation in progress and to access system set-up menu for all programming features.
- 2.27.2 Speaker and microphone for hands free communication.  
Administrative  
Phones requiring a push to talk switch will not be accepted.
- 2.27.3 Multiple touch programmable function buttons for frequently dialed functions, page groups, bell schedules, program distribution, etc.
- 2.27.4 Emergency programmable buttons for alert and evacuation tones.
- 2.27.5 Mute function for privacy.
- 2.27.6 Selective monitoring of program sources being distributed to staff locations.
- 2.27.7 Facilities to transfer or hold calls.
- 2.27.8 Auto redial of the previous two numbers dialed.
- 2.27.9 Adjustable ringer volume.
- 2.27.10 Hands free speaker volume control.

2.28 An operator's display shall be provided at each designated administrative phone, that does not have an integral display. This 4 x 20 LCD display shall continually show time, day, date and current operating time schedule(s) unless it is in the programming mode. In addition, it shall show up to three (3) incoming calls (the fourth line shows how many additional calls are in the queue). Programming menus, time schedules and complete system architecture can also be displayed when in the programming mode.

2.29 A Windows® based administrative software package to allow computer based access to all paging functions, including instantaneous distribution of pre recorded emergency messages shall be provided. The package shall utilize a point and click operation to allow music distribution to individual zones, manage any system controlled remote devices, manipulate schedules and paging groups as well as control time and clock functions. The software package shall be client-based to ensure that any programming changes are duplicated (backed up) in the computer for download. Equipment not providing a computer-based operational user interface to the paging system or using browser-based programming will not be acceptable.

2.30 The staff station call-in assembly shall be a momentary contact spring return type switch and an integral volume control mounted to a stainless steel single gang plate. This volume control shall compensate for varying room sizes and acoustical conditions. The call-in switch shall be capable of 7 different access levels:

2.30.1 Level 0 – Normal – Normal calls are initiated when activated.

2.30.1 Level 1 – Security – Allows activation of a common system relay.

2.30.1 Level 2 – Normal/Emergency calls – Normal calls are initiated by simply depressing the call-in switch. These stations can initiate an emergency call by depressing the call-in switch 4 times within 5 seconds. Emergency calls will display “HELP” on administrative displays and provide a special ring signal. This emergency call can be programmed to ring a special emergency phone.

2.30.1 Level 3 –Urgent/Emergency – Same as Level 2 except depressing the call switch once will initiate an “URGENT” call, which would be a higher priority than a “NORMAL” call.

2.30.1 Level 4 –Night – Allows for the ringing of the proper Administrative Telephone as well as all speakers in the building.

2.30.1 Level 5 – Emergency – Depressing the call switch will immediately place an emergency call.

2.30.1 Level 6 –Ignore – Allows the call switch to be bypassed while not affecting the staff station speaker.

2.31 The staff station speaker shall be an 8" dual cone design with a minimum frequency response of 30Hz-18kHz. It shall have a minimum voice coil diameter of 3/4" and be capable of handling 10 watts of program power. Any system requiring a line matching transformer for each staff station location shall use a transformer of such quality that a minimum frequency response of 60Hz-12kHz will be provided.

2.31.1 Classroom speakers shall be provided as indicated on drawings:  
Ceiling mounted with white round metal baffle designed to mount in separate back box. Back box shall be designed to

mount in industry standard drop ceiling. Provide back boxes and tile bridges for all speakers.

Wall mounted, surface design with sloped front. Box shall be gray with black baffle.

Self contained call-in intercom stations shall be vandal resistant with a stainless steel faceplate and mount in a 2 gang back box. This unit shall include a 45-ohm speaker and an integral call switch.

2.32 The hallway and other multi speaker areas shall use speakers with an 8" dual cone design with a minimum frequency response of 30Hz-18kHz. It shall have a minimum voice coil diameter of  $\frac{3}{4}$ " and be capable of handling 10 watts of program power. Multi purpose area speakers shall incorporate 25/70 volt speaker assemblies with line matching transformers.

2.32.1 Multi purpose area speakers shall be:

Ceiling mounted with white round metal baffle designed to mount in separate back box. Back box shall be designed to mount in industry standard drop ceiling. Provide back boxes and tile bridges for all speakers.

2.33 Weatherproof outside paging loudspeakers shall have a minimum power rating of fifteen (15) watts.

2.33.1 The speaker shall have a minimum frequency response of 275-14kHz and a dispersion angle of 120 x 60 degrees. It shall be surface mounted, capable of delivering five fifteen (15) watts and be rated for outside use.

2.33.2 The speaker shall have a minimum frequency response of 275-14kHz. It shall be flush mounted in a stainless steel vandal resistant enclosure. It shall be capable of delivering three (3) watts and be rated for outside use.

2.34 Provisions for the automatic distribution of paging announcements from a remote desk mounted microphone. Keying the microphone shall automatically mute all other audio sources and transmit the microphone signal to all rooms or specific groups of rooms as programmed into the system software.

2.35 Provide Program Monitor Assembly to preview audio material prior to distribution. Provide an antenna outside the rack to ensure proper reception on the FM band. Provide appropriate wall or desk rack mounting of this device as shown on drawings.

- 2.36 Provide impedance matching transformer for one way amplified Zones. There shall be one each for the hallways, outside horns, each gym, and the cafeteria.
- 2.37 Provide mixer amplifier for the cafeteria speakers the amplifier shall have a minimum of 3 inputs. This amplifier will be connected to the intercommunication system for pages and will have atleast one input from the cafeteria for in room announcements.
- 2.38 Provide individual amplifier channels for each of the one way paging zones. This amplifier shall have a minimum of 75 watts per channel with 70 volt or 25 volt outputs. The amplifier shall have gain controls for each channel to balance the separate paging zones.
- 2.39 Provide free standing enclosed rack with 35 rack spaces and low profile caster base. Rack should include 1 rack shelf for owner provided audio source and appropriate mounted power strip for all equipment housed in the rack. Use flanged blank panels to close in the open spaces in the rack.

#### **MASTER CLOCK**

- 2.38 Provide an integral Master Clock facilities shall be directly connected to the internal data bus structure of the Communication System allowing operation and programming under the same software package. Systems requiring a separate Master Clock assembly with a separate software program hardwired into the intercom component of the system will not be accepted. The Master Clock shall provide the following functions:
  - 2.38.1 Computer interface for on or off site programming.
  - 2.38.2 Capacity for 1024 events and up to 15 holidays.
  - 2.38.3 Events shall be programmable to any one or all of eight schedules to allow flexibility due to season, short day or special events.
  - 2.38.4 Fully automatic running schedules. Programming of specific schedule(s) to specific day(s).
  - 2.38.5 Capability of reviewing, editing or deleting events.
  - 2.38.6 Facilities for automatic distribution of program material during class change periods.
  - 2.38.7 Crystal controlled time base for accuracy.
  - 2.38.8 Super Cap for back up of time keeping function. Systems requiring batteries for basic memory storage will not be accepted.

### PART 3 CABLES

- 3.0 All new cable shall be listed for the intended purpose. Use CAT 3/5/5e/6, 24AWG, U.L. Listed cable. Home run all station wiring in individually jacketed cables. Number of pairs within the cable may vary due to specific field conditions.
- 3.1 All interior staff station wiring shall be in accordance with current new construction wiring guidelines published by the manufacturer, including staff speaker and call switch.
- 3.2 All interior Administrative phone(s) shall be wired in accordance with current new construction wiring guidelines published by the manufacturer.
- 3.3 All operator displays shall be connected to the system in accordance with current new construction wiring guidelines published by the manufacturer.
- 3.4 All power amplified speaker circuits shall be connected using one twisted pairs 18ga min in an overall jack.
- 3.5 All constant voltage speaker circuits shall be connected using a separate twisted shielded pair. Refer to drawings for proper wire gauge.
- 3.6 Transient suppression is required on all wiring leaving the building.
- 3.7 All cables run in underground conduits must be suited for wet locations.

### PART 4 INSTALLATION

- 4.0 Complete system shall be installed in strict accordance with the recommendation of the manufacturers as approved by the Architect, anchoring all components firmly into position or long life under hard use.
- 4.1 System equipment locations shown on the Drawings are approximate. Verify exact location s in the field and coordinate these with the Architect.
- 4.2 After the systems have been completely tested, the cables between the sound system equipment cabinet conduit access boxes and the sound system equipment cabinets shall be neatly bundled and held with either nylon lacing cord or nylon cable clamping devices similar to Thomas & Betts "Ty-Rap". More than one bundle may be used if one bundle would be too large to be workable. Provide sufficient loop in the bundle to allow moving the equipment cabinets away from the wall for servicing. Cable bundle(s) shall be securely attached to the equipment.

### PART 5 INSPECTIONS AND TEST UPON COMPLETION

- 5.0 Check out of the installation shall be made by the contractor. The system shall be free of short circuits, ground loops, parasitic oscillations, excessive system noise and hum, and instability. The Contractor shall, at his own expense, make any changes required to meet these performance requirements.

- 5.1 Check-out and final connections to the system shall be made by a factory trained technician in the employ of a manufacturer of the products installed. In addition, factory trained technicians shall demonstrate operation of the complete system and each major component to the Owner.
- 5.2 System field wiring diagrams shall be provided to this subcontractor by the system manufacturer prior to installation.
- 5.3 All materials and installation shall be guaranteed to be free of defects in material and workmanship for one year after final acceptance of installation and test.
- 5.4 Upon completion of the installation, four (4) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational manuals have been received.
- 5.5 Upon completion of the installation of the equipment, the electrical contractor shall provide to the engineer a signed statement from the equipment supplier that the system has been wired, tested, and functions properly according to the specifications.
- 5.6 Nothing herein contained shall be construed to relieve the Contractor from furnishing a complete and acceptable electrical wiring system in all its categories. The engineer will condemn and reject any materials or labor which are or may become detrimental to the accomplishment of the intentions of these specifications.

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SECTION 275116 - PUBLIC ADDRESS AND MASS NOTIFICATION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Electrical Contractor is to furnish all materials, equipment, labor, professional services and instrumentation necessary to provide and install the system as herein described and indicated on the drawings.
- B. This Contractor shall guarantee all equipment and wiring free from inherent mechanical or electrical defects one-year warranty from date of installation.
- C. The manufacturer shall furnish gratis to the owner a one year contract effective from date of installation for maintenance and inspection service of the manufacturer's equipment with a minimum of two inspections during the contract year.
- D. The Equipment Supplier shall be a factory authorized franchised distributor for the products that he proposes to furnish.
- E. The Equipment Supplier shall show satisfactory evidence upon request that he maintains, within a fifty-mile radius of the project, a fully equipped service organization with standard replacement parts. All installation and service performed shall be by qualified personnel.
- F. All bids shall be based on equipment herein mentioned and specified. All substitute equipment shall be prequalified by the Engineer, no later than ten days prior to bid date. The substitute equipment supplier shall furnish, to the Engineer, system riser diagrams, engineering data and or samples of the alternate equipment, supporting compliance with the specifications, for prequalification.
- G. All systems provided under this section shall be furnished with a one-year warranty by the Contractor and longer factory warranties as available in standard products.
- H. Contractor Qualifications:

1. Contractor shall have been in the Sound Reinforcement business and performed similar installations for a minimum of 5 years. Contractor is to be located within 50 miles of project.

## PART 2 - PRODUCTS

### 2.1 REMOTE SOUND SYSTEM RACK, MISC

- A. The Sound System for this area is to provide smooth even direct coverage throughout the seated area. The System shall provide sound reinforcement for music, speech, CD/MP3 playback, Wired Microphones, Wireless Microphone, Assisted Listening, and System head end shall be a Remote sound rack and shall house Power up Sequencer, Program Source, Amplifiers, and Digital Signal Processor.
- B. Audio Mixer - The audio mixing console shall be a self-contained unit, complete with input, output and master sections and an integral switched mode power supply capable of operating under various AC voltage inputs from 90VAC to 240V AC. The audio mixing console shall have 12 (8, 6) mono input channels, two stereo input channels and a stereo mix master output. It shall be possible to have the audio mixer mounted on a desktop or rack-mounted through optional rack mounting ears, and shall be of a rugged steel panelled construction. All jack sockets shall be of a metal construction. The mono input channel shall have the following features: an electronically balanced wide range mic and line input on XLR and ¼" jack connectors with continuously variable sensitivity between –60dBu and -5dBu, globally switched 48V phantom power, a 3-band equaliser with shelving HF and LF controls at 12kHz and 60Hz with 15dB of cut or boost, and an MF control continuously variable from 140Hz to 3kHz with a Q of 0.77 and cut or boost of 15dB. Two auxiliary sends shall be provided, with individual level controls. Each Aux shall be individually globally switchable to be pre-fade or post-fade sends. Routing to the mix output shall be in stereo via a Pan control with –4.5dB centre-drop, along with Mute and SOLO (PFL) functions. A Peak LED shall warn of signals within 6dB of clipping. There shall be a pre-EQ insert point on a ¼" TRS jack, and a 60mm fader shall control the overall channel signal level. The stereo input channel shall have the following features: Line input connectors on electronically balanced ¼" jack connectors with input gain continuously variable from 0 to +22dB. There shall be a two-band equaliser with HF and LF shelving controls at 12kHz and 60Hz with cut or boost of 15dB. Two auxiliary sends shall be provided, both with individual level controls and feeding a mono sum of the stereo channel to the Aux busses. Each Aux shall be individually globally switchable to be pre-fade or post-fade sends. Routing to the mix output shall be in stereo via a Balance control, along with Mute and SOLO (PFL) functions. A Peak LED shall warn of signals within 6dB of clipping, and a 60mm fader shall control the overall channel signal level. The Master section

shall contain the following facilities: a stereo playback input and record output, a stereo mix output, monitor outputs, output metering, a 1/4" headphone output mounted on the console front panel, 2 Aux master outputs, and a global 48V phantom power switch with LED. The Playback inputs shall be routed to the Mix outputs via a gain control when a PLAYBACK TO MIX button is pressed, and to the monitor outputs when a MONITOR PLAYBACK is pressed. Ten-segment LED bargraph meters shall be used to display L-R output levels, which shall be replaced by an active SOLO signal. The main stereo mix output shall be controlled by 100mm faders and fed to electronically balanced XLR connectors. There shall be Mix Inserts on 1/4" jack connectors. The two Auxiliary Master outputs shall be fed to electronically balanced 1/4" jack connectors. The output level of the 1/4" jack headphone and monitor feeds shall be variable and may be replaced automatically by any SOLO signal. The specifications and dimensions of the console shall be as published in the Soundcraft EPM brochure. The audio mixing console shall be the Soundcraft EPM 12 Console with rack mount. Provide (1) Or equal by Allen and Heath

- C. Power Conditioner - The SX1120RT shall be a one-rack-space unit in a magnetic shielding steel enclosure. It shall operate from 120 volts AC and have a 9-foot, grounded, 3-wire #12 line cord. There shall be 8 grounded AC receptacles on the back panel, with 6 switched and 2 always on. The unit shall have a front-panel courtesy receptacle and remote-control capability with a visual indicator. Overall dimensions shall be 1.75" H x 19" W x 10.5" D. Weight shall be 11 pounds. The SX1120RT shall have a load rating of 20 amps at 120 volts, a self-test circuit with visual indicator, and provide EMI/RFI filtering, inrush current elimination and catastrophic over/under-voltage shutdown. It shall meet Federal Grade A, Class 1, Mode 1 guidelines for powerline surge suppressors and withstand at least 1000 occurrences of surge pulse voltages up to 6000 volts. Unit shall be SurgeX SX1120RT or equal from Lowell or APC. Provide (1).
- D. CD Player -
  - Plays audio CDs, MP3 CDs and WAV file CDs
  - Dock connector for Apple iPod charging and playback
  - iPod video playback from S-video or composite output
  - CD TEXT and ID3 tag support
  - Continue, Random and Program play modes
  - Repeat All and Repeat Single play modes
  - Index Search
  - Shock/skip prevention memory buffer
  - ±12% pitch control (analog outputs only)
  - RCA unbalanced line outputs (CD and iPod)
  - Coaxial and Optical S/PDIF digital out (CD only)
  - 1/4" stereo headphone output
  - 2u rack mountable
  - Wireless 55-key remote control
  - 19"W x 3.72" H x 11.73"D

9.3 lbs

Provide (1) Tascam CD-200i or equal. Install in main equipment rack.

E. Wireless Microphone System -

The wireless system shall operate in the UHF band between 524 MHz and 865 MHz, with the specific available frequency range being dependent on the user's locale. Effective range of the system, receiver to transmitter, shall be 100 meters (300 ft.), under optimal conditions. Each system shall allow selection of over 960 operating frequencies across 24 MHz of bandwidth in order to avoid RF interference. Optimal frequencies shall be selected automatically, ensuring that individual systems run at their highest level of performance, and that multiple systems in simultaneous use do not interfere with one another. An infrared signal beamed from the receiver shall be used to synchronize the frequency between the transmitter and the receiver. The process of synchronizing the system shall be simple and instantaneous. Each transmitter shall be powered by two AA batteries. Transmitters shall have a power on-off/mute switch, as well as a timed backlit LCD showing frequency group and channel, locked/unlocked status, and battery strength. Available transmitters shall include a body pack for use with guitars, basses, and other electric instruments, as well as lavalier, headset or instrument microphones, and a handheld transmitter for vocals. The body pack shall include a 3-position switch and the handheld transmitter shall include a 2-position switch to compensate for higher- or lower-gain devices. Both transmitters shall feature an easily accessible infrared port for system synchronization. The receiver shall have a multi-function display showing group, channel, frequency, transmitter battery strength, and locked/unlocked status. The system shall use diversity technology to improve reception, minimize signal dropouts, and achieve the best possible signal-to noise ratio. The receiver shall include an audio level meter and an infrared port for system synchronization. The system shall be the Shure SLX Wireless. Provide (4) Shure SLX 124/85/SM85 wireless systems. Provide (2) Shure UA221.

F. Amplifier – General

Number of channels 4

Peak total output all channels driven 1600 W

Peak output voltage per channel 141 V

Max. output current per channel 8.5 Arms

Max. Output Power 16 ohms 8 ohms 4 ohms 2 ohms Hi-Z

Per ch. (all ch.'s driven) 400 W 400 W 300 W n.r. 400 W (70 Vrms / 100 V peak)

Bridged per ch. 800 W 600 W n.r. n.r. 800 W (140 Vrms / 200 V peak)

Performance with Gain: 35 dB and VPL: 100 V

THD 20 Hz - 20 kHz for 1 W <0.1%

THD at 1 kHz and 1 dB below clipping <0.05%

Signal To Noise Ratio >112 dBA

Channel separation (Crosstalk) at 1 kHz >70 dB

Frequency response (1 W into 8 ohms) +0/-3 dB 6.8 Hz - 34.2 kHz

Input impedance 20 kOhm

Input Common Mode Rejection, CMR 50 dB  
Output impedance @ 100 Hz 30 mOhm  
Voltage Peak Limiter (VPL), max. peak output  
VPL, selectable per ch. 3) 141, 118, 100, 85, 71, 59, 50, 42 V  
VPL, selectable when bridged 3) 1) 282, 236, 200, 170, 142, 118, 100, 84 V  
Voltage Peak Limiter mode (per ch.) Hard / Soft  
Gain and Level  
Amplifier gain selectable (all channels) 1)  
– rear-panel switches  
23, 26, 29, 32, 35, 38, 41, 44 dB  
Default gain 35 dB  
Level adjustment (per ch.) Front-panel potentiometer, 21 position detented from -inf to 0 dB, hidden behind security panel/dust filter grille  
Connectors and switches  
Input connectors (per ch.) 3-pin Phoenix, electronically balanced  
Output connectors (per ch.) Barrier strip 2-pole screw terminals  
Output bridge mode A+B and/or C+D, inputs A and C are input source  
NomadLink® network On board, 2 x RJ45 connectors  
Intelligent fans (on/off) Yes, depending on presence of output signal  
Power on/off and Remote enable on/off Individual switches on front-panel  
Cooling Two fans, front-to-rear airflow, temperature controlled speed  
Front-panel indicators  
Common NomadLink® Network; Power Average Limiter (PAL) 2); Power on  
Per channel  
Signal present / High-impedance; -10 dB and -4 dB output signal; Voltage Peak Limiter (VPL); Current Peak Limiter (CPL);  
Very High Frequency (VHF); High Temperature; Fault; Mute  
Power  
Operating voltage, 230 V / 115 V nominal 130 -265 V / 65-135 V  
Minimum power-up voltage, 230 V / 115 V 171 V / 85 V  
Power Average Limiter (PAL) 2) Yes  
Soft start / Inrush current draw Yes / max. 5 A  
Mains connector 230 V CE: 16 A, CEE7; 115 V ETL: 20 A / NEMA 5-20P  
Dimensions (W/H/D) W: 483 mm (19"), H: 88 mm (2 U), D: 343 mm (13.5")  
Weight 12 kg (26.4 lbs.)  
Finish Black painted steel chassis with gray painted steel front  
Approvals CE, ANSI/UL 60065 (ETL), CSA C22.2 NO. 60065, FCC  
Amplifier shall be LabGruppen, Crown, or QSC. Provide (1)

G. Gym Speakers -

Chassis Size	304.8 mm (12")
Color	Black, White
Directivity Index	11.1 dB
Input Connections	Four-pin Speakon (2)
Speaker Type	Fullrange, Mid-High, Two-Way

Transformer	Yes
Frequency Response (-10 dB)	50 - 20000 Hz
Internal Crossover	Yes
Sensitivity 1 W/1 m	99 dB
Max. SPL/1m (calc)	131 dB
Coverage (Nominal -6 dB) H	65 °
Coverage (Nominal -6 dB) V	65 °
LF Transducer	DL12BFH
HF Transducer	DH2010
Crossover Frequency	1500 Hz
Nominal Impedance (Passive)	8 Ω
Minimum Impedance	6 Ω
Flying	Yes
Outdoor	Yes
Height	586 mm (23.07")
Depth	312 mm (12.28")
Weight Net	17.7 kg (39.02 lbs)
Provide (6) EV SX300 PIX speakers or equal JBL/QSC.	
Provide (2) MB300 Array Bracket or equal JBL/QSC.	
Provide (4) MB200 Mounting Bracket or equal JBL/QSC.	

H. Assisted Listening -

The PPA T35 transmitter shall be microprocessor controlled with push button configuration. It shall have an operating range of up to 1000 feet. It shall have 17 wideband channels operating on 72.1–75.9 MHz. It shall have 77 narrowband channels operating on 72.025–75.975 MHz.

The PPA T35 shall have a push button controlled LCD digital display. There shall be three pre-configured (selectable) application presets: Hearing Assist, Music and Voice. Configurations for Bandwidth, Frequency, Audio Input Source (Microphone, Line, Simplex), High Pass Filter, Low Pass Filter, Compressor Slope, Compressor Gain and RF Output Power shall be push button controlled. The audio level shall be adjustable by push button control. There shall be a 10 LED array showing audio level from +9 to -18 at 3dB intervals. The PPA T35 shall have a 1/4" phone jack with push button volume control. It shall have push button control for monitoring source audio or transmitted audio. It shall have an input overload indicator. It shall have an "on" indicator and power button.

The PPA T35 shall be powered by 24 VAC power supply via a 3-pin Molex® connector. It shall have a 75 ohm F-connector antenna. It shall have an ANT 025 whip antenna on the top panel directly connected to the circuit board. The transmitter shall have an RCA line output jack. It shall have a combination 1/4"

phone/XLR audio input jack. It shall have an RF "Off" timer that turns off RF signal after 1 hour of no audio activity.

The PPA T35 shall have FCC, be compliant with RoHS and WEEE regulations and be powered by UL and CSA power supply. It shall have a 5-year parts and labor warranty\*. It shall be compatible with Williams Sound FM equipment operating on 72-76 MHz. The transmitter shall be a Williams Sound model number PPA T35.

The PPA R37 receiver shall be encased in black, PC/ABS impact-resistant plastic with a hinged battery door. The receiver shall be a body-pack style and include a detachable belt-clip for hands-free operation. Receiver shall have a 3.5mm stereo/mono jack to accommodate stereo or mono low impedance earphones, headphones and neckloops. Receiver shall have a combination volume control with power on/off rotary dial. It shall have a green LED indicating battery and system status codes. The PPA R37 shall have access to 17 wideband channels between 72-76MHz. Channel selection shall be made by pushing the seek button inside the battery compartment. Receiver shall have channel-lock capability.

Receiver shall have a slide switch inside the battery compartment to select Alkaline or rechargeable NiMH rechargeable battery operation. It shall have charger contacts on the bottom of the receiver for use with Williams Sound drop-in chargers CHG 3512 and CHG 3502. The PPA R37 shall operate up to 48 hrs with two AA Alkaline batteries, and up to 30 hrs with two AA NiMH rechargeable batteries (BAT 026).

Receiver shall provide a maximum out of 35mW at 16 ohms with an earbud-type earphone. The system's audio frequency response shall be 200Hz to 15kHz ± 3dB and the signal-to-noise ratio shall be 65dB min. The receiver sensitivity shall be 2µV or better at 12dB Sinad with squelch defeated. The PPA R37 shall accept up to ±75kHz FM deviation and have a 75µs de-emphasis time constant.

The PPA R37 shall have FCC, Industrie Canada approvals and be compliant with RoHS and WEEE regulations. The receiver shall be covered by a five-year parts and labor warranty\*.

This receiver model shall be the Williams Sound model PPA 337. Provide (1). Also provide (1) CHG 3512.

I. Equipment Rack -

Color:	Black
Handles:	2 Carry
Latches:	12 Twist
Wheels	Casters
Water Resistance:	Gasket in Lid

Interior Dimensions

Interior Length:	24.2 5"	Interior Length (Aux): 19.25" Interior Width (Aux): 17.50"
Interior Width:	19.0 0"	
Interior Height:	14.0 0"	

Rack Dimensions

Rackable Depth (to rear lid):	26.7 5"
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Rack Units: 10

Top Rack Units: 12

Exterior Dimensions

Exterior Length:	29.00"
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Exterior Width:	22.50"
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Exterior Height:	27.00"
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Weight:	54.00 pounds
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Provide (1) Gator GRC-12X10PU or SKB equivalent.

J. Equipment Drawer -

Sample EIA compliant 19" rack mount drawer shall be Middle Atlantic Products model # DX or TDX (X = # of rack spaces required, refer to chart). Drawer shall have an overall height of 3.5" (refer to chart), and useable depth of 14-1/2".  
Drawer base shall be 20-gauge steel, top and sides shall be 16-gauge steel.  
Drawer faceplate shall be .090" thick aluminum with a (black brushed & anodized or black textured powder coat) finish (refer to chart). Drawer shall use full extension, ball bearing slides. Grommet shall be provided for safely passing cables through the cable entry point at the rear of the drawer on 2, 3 and 4 space models. 2, 3 and 4 space drawers shall include a no-slip drawer mat. Drawer shall be warranted to be free from defects in materials or workmanship under normal use and conditions for a period of three years. Drawer shall be UL Listed in the US and Canada. Drawer shall be GREENGUARD Indoor Air Quality Certified for Children and Schools. Drawer shall be RoHS EU Directive 2002/95/EC compliant. Drawer shall be manufactured by an ISO 9001 and ISO 14001 registered company.

Provide (1) Middle Atlantic D2 Drawer or equal from Lowell

K. Wired Microphones -

Type	Dynamic
Frequency Response	50 to 15,000 Hz
Polar Pattern	Cardioid
Sensitivity (at 1,000 Hz Open Circuit Voltage)	-54.5 dBV/Pa (1.85 mV) 1 Pa = 94 dB SPL
Impedance	Rated impedance is 150Ω (300Ω actual) for connection to microphone inputs rated low impedance
Polarity	Positive pressure on diaphragm produces positive voltage on pin 2 with respect to pin 3.
Case	Dark gray, enamel-painted, die cast metal; matte-finished, silver colored, spherical steel mesh grille
Connector	Three-pin professional audio connector (male XLR type)
Connector	Three-pin professional audio connector (male XLR type)
Net Weight	298 grams (10.5 oz)
Dimensions	162 mm (6-3/8 in.) L x 51 mm (2 in.) W

Provide (4) Shure SM58LC Microphones. Also provide (4) ProCo M-25 and (2) M-50 Microphone Cables or equal from Rapco.

L. Audio Combiner -

Inputs (2): -10 dBV nominal, -22 dBV minimum

Input Impedance: 10 kΩ

Noise: < -85dB below +4dBu (-10 dBV input @ 12 dB gain)

THD+N: < 0.005%

Frequency Response:

10 Hz to 20 kHz (+/- 0.25 dB into bridging input)

25 Hz to 20 kHz (+/- 0.25 dB into 600 Ω)

Gain: Unity to +14 dB nominal (adjustable)

IMD: > 0.001%

Output: 150 Ω balanced, +4 dBu to drive low or high impedance, balanced or unbalanced lines

Headroom: > 18 dB

Power Requirement: GROUND-REFERENCED, 24 Vdc @ 30 mA

Ambient Operating Environment: 0° C to 55° C

Provide (2) RDL TX-LC2

M. Microphone / Line Input Plates -

Provide (4) ProCo WP1013 Wall Plates or Rapco Equal

N. Audio and Speaker Snake -

- Provide (1) 30' 6 Channel microphone snake
- Provide (1) 30' 12/4 SO cord speaker snake
- Provide (1) Single Gang custom multipin 6 channel input plate
- Provide (1) Single Gang 4 contact Speakon Input Plate

**SECTION 275123.50 - COMMUNICATION SYSTEM SCHOOL AND COMMERCIAL CONSTRUCTION PERFORMANCE SPECIFICATION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. The Contractor shall furnish and install all equipment including, but not limited to, outlet boxes, conduit (with pull strings), wiring, telephones, annunciators, speakers, and microphones as shown on the plans, and all other equipment necessary to provide a complete and operating system for the Perry Heights Gym Addition Project.
- B. Equipment supplied by Valcom, Atlas Sound, Lowell, Quam-Nichols, Shure, Crown, and WPW shall be considered as meeting these specifications and as the base bid. The specifying authority must approve any alternate system. Bidders supplying an alternate system must make the authority aware of their intentions and provide adequate information, including catalog cuts, working and shop drawings, and a demonstration of the proposed system at least 10 days prior to bid date. Any prior approval of an alternate system does not exempt the supplier from meeting the intent of these specifications. If the alternate system fails to provide all the requirements specified in this document, the Contractor shall be responsible for all costs associated with the removal and replacement of said equipment.
- C. The Communication system shall provide distribution of intercom, overhead paging, emergency paging, class change time tones, emergency tone and program material.

**1.2 SUBMITTALS**

- A. Data sheets shall be provided on all equipment being provided.
- B. Internal control cabinet drawings showing internal block diagram connections shall be provided.
- C. Wiring diagrams showing typical field wiring connections shall be provided.
- D. FCC registration number shall be provided.

**1.3 QUALIFICATIONS**

- A. The Contractor shall be from an established and locally run business which has been operating in the area for a minimum of five years.
- B. The Contractor shall show evidence that he maintains a service organization and parts inventory to adequately support the supplied equipment.

#### **1.4 MAINTENANCE SERVICE**

- A. The Contractor shall provide a one-year guarantee of the installed system against defects in material and workmanship. All labor and materials shall be provided at no expense to the Owner. Guarantee period shall begin on the date of acceptance by the Owner or engineer.
- B. A maintenance contract offering continued factory authorized service of this system shall be made available if requested by the Owner.

#### **QUALITY ASSURANCE**

- 1.10 The Contractor shall currently maintain a locally run business for a minimum of five years and shall be an authorized distributor of the supplied equipment with full warranty privileges.
- 1.11 The supplying Contractor shall have attended the manufacturer's installation and service school.
- 1.12 The Contractor shall furnish manufacturer's manuals of the completed system including individual specification sheets, schematics, inter-panel and intra-panel wiring diagrams. In addition, all information necessary for the proper operation of the system must be included. Any bidder using other than the specified equipment must provide this information prior to bidding.
- 1.13 As built drawings that include any changes to wiring, wiring designations, junction box labeling and any other pertinent information shall be supplied upon completion of project.

#### **IN SERVICE TRAINING**

- 1.15 The Contractor shall furnish a minimum of four hours of in service training with the system. These sessions shall be broken into segments that will facilitate the training of individuals in operating station equipment, administrative devices, user programming functions, and program distribution equipment. Operating manuals and users guides shall be provided at the time of the training.
- 1.16 The contractor shall provide subsequent trainings as requested by the owner for the first year free of charge.

#### **WIRING**

- 1.16 System wiring shall be in accordance with good engineering practices as established by the EIA and NEC. Wiring shall meet all established state and local electrical codes. All wiring shall test free from grounds and shorts.

## PART 2 PRODUCTS

- 2.0 The installation shall include a comprehensive programmable microprocessor based communications system consisting of a central switching exchange capable of handling up to 360 remote stations.
- 2.1 All programmable functions shall be stored in non-volatile memory to prevent loss during a power failure condition.
- 2.2 System shall have provisions for battery back up and charger specifically designed for use with system power supplies. Systems that use an uninterruptible AC power supply (UPS) must be pre-approved.
- 2.3 The central switch shall utilize standard dual tone multi-frequency type decoding (DTMF) for conformance with standard telephone practices.
- 2.4 The central switch shall provide a LAN/WAN connection via a standard Ethernet RJ-45 jack to provide on or off site programming and or diagnostics. It shall be possible for the user with a computer connected to the LAN/WAN to access and change all system parameters as necessary and to save complete system architecture on its storage medium. It shall also be possible to run diagnostic software to isolate and correct faults in the system. These capabilities must also be provided thru a standard RS232 port for local access.
- 2.5 The system shall be provided with four (4) multifunction ports for connection of administrative phones, any loop start trunk (LST) port of a KEY or PBX telephone system. All communication between administrative phones shall be non-blocking. Provide a minimum of one LST port interface as part of this basic specification.
- 2.6 The system shall have the ability to be connected to a 10/100 switched, multicast enabled network. This connection shall be via a standard Ethernet RJ-45 jack and shall provide all system functionality across the LAN/WAN to remote cabinets eliminating the need for individual peripherals to be wired back to the main switch. All devices connected to these remote shelves shall provide the same capabilities as those connected directly to the MDF.
- 2.7 Provide a one (1) watt amplifier circuit for each remote station to allow absolute flexibility for simultaneous paging, program distribution and time tone schedules. Equipment requiring a single power amp for these functions shall size such an amp as to deliver a minimum of (1.5) watt per station to compensate for inherent transformer losses. Additional power will be required for hallway speakers, outside horns and common areas.
- 2.8 Facilities for a directly connected RS232 printer output to create a log of system activity. System activity logging and reporting shall also be delivered through the RJ-45 jack to be distributed across a LAN.
- 2.9 Capabilities of zoning incoming calls from any staff station location to any of four (4) multifunction ports.

- 2.10 Four (4) telephonic links between DTMF telephone locations.
- 2.11 Eight (8) unrestricted audio paths for private communication between administrative phones, administrative phones and staff stations, program distribution or time tone distribution and paging. The system must be able to perform multiple pages to different zones, class change tones and music distribution simultaneously. A minimum of four (4) simultaneous live voice pages while leaving four (4) additional paths for music and/or class change tones can be supported. Systems that cannot support a minimum of three (3) live pages and one (1) program distribution channel simultaneously will not be accepted.
- 2.12 Provide one (1) direct dialing, two-way voice amplified intercom link with automatic gain control for every twenty-four stations allowing multiple open voice conversations simultaneously.
- 2.13 Provide eight (8) separate time-tone schedules with a minimum of 1024 events. Individual events of each schedule shall be capable of sounding one of nine user defined tone types or custom messages from a customer programmed voice chip. These schedules can be run individually or simultaneously.
- 2.14 Eight (8) internal relays which can be controlled manually from any administrative phone or controlled automatically via an optional integral Master Time Control Center.
- 2.15 Provide (8) eight door release outputs for remote door lock control.
- 2.16 Program distribution of three (3) audio program sources simultaneously to any one or group of staff stations. Typical audio program sources can include:
  - 2.16.1 AM/FM Digital Tuner
  - 2.16.2 Cassette Deck
  - 2.16.3 CD Player
  - 2.16.4 AM/FM CD Combination Player
- 2.17 Seventy-Two (72) paging zones and a dial on the fly group with two (2) priority levels of all call capability. Paging into any one zone shall not interrupt any program(s) previously distributed. If the areas receiving program are part of the page zone the program shall be interrupted during the page and returned automatically when the page is completed. Each group shall be able to have a custom name assigned to it simplifying programming of multiple groups of speakers.
- 2.18 Nine (9) built in software definable signaling tones. A voice chip with the option for a male or female voice, which can be used to store custom messages, labels for rooms and custom emergency tones. Voice announcements can be automatically or manually at any time.

- 2.19 Two (2), three (3) or four (4) digit programmable architectural room numbers for administrative and staff station locations.
- 2.20 Integral internal program clock for time tone distribution and other time related functions. It shall be possible to synchronize the program clock from an external master clock. The program clock can be used to control standard Sync wired clocks and Digital clocks with the addition of an optional Master Clock Board.
- 2.21 The system shall be provided with voice-synthesized call-in, which provides any administrative telephone audible annunciation of the calling parties location and architectural room number.
- 2.22 Enhanced Caller I.D. information for use with all administrative phones. It shall be possible to deliver industry standard enhanced Caller I.D. information to any third party phone system providing seamless annunciation of room numbers and operation between systems.
- 2.23 Discriminating ringing to distinguish different levels of incoming calls.
- 2.24 Selective pre announce tones: a) Single chime-Page b) Dual chime-Intercom call c) or a custom tone.
- 2.25 Call confirmation tone at the intercom speaker location when a call is placed. This tone verifies that the call has been placed into the system queue. A second confirmation tone shall be activated if the call is upgraded to an emergency call (See 2.31.3). Equipment, which does not notify the caller that the system has accepted the upgraded call, will not be accepted.
- 2.26 Unanswered emergency calls shall, after a user-determined time, have their architectural room number automatically announced over any one or group of speakers. This automatic page notifies nearby staff of an unanswered emergency condition and ensures staff notification of the emergency situation.
- 2.27 The administrative telephone shall be a standard DTMF set. Any system requiring a "smart" or proprietary type instrument will not be acceptable. The administrative phone may be equipped with an optional 4 x 20 LCD display for visual display of incoming calls. The following features will be provided by the administrative telephone:
  - 2.27.1 Three levels of system access:
    - a. Level 1 - Dialing of any administrative or speaker station, all call, emergency all call, zone paging, scroll/erase call waiting queue, transfer and conference.
    - b. Level 2 - Same as Level 1 with select and distribute program capabilities, set/reset alarm and relay functions.

- c. Level 3 - Same as Level 2 plus the capability to bump or join a conversation in progress and to access system set-up menu for all programming features.
- 2.27.2 Speaker and microphone for hands free communication.  
Administrative  
Phones requiring a push to talk switch will not be accepted.
- 2.27.3 Multiple touch programmable function buttons for frequently dialed functions, page groups, bell schedules, program distribution, etc.
- 2.27.4 Emergency programmable buttons for alert and evacuation tones.
- 2.27.5 Mute function for privacy.
- 2.27.6 Selective monitoring of program sources being distributed to staff locations.
- 2.27.7 Facilities to transfer or hold calls.
- 2.27.8 Auto redial of the previous two numbers dialed.
- 2.27.9 Adjustable ringer volume.
- 2.27.10 Hands free speaker volume control.

2.28 An operator's display shall be provided at each designated administrative phone, that does not have an integral display. This 4 x 20 LCD display shall continually show time, day, date and current operating time schedule(s) unless it is in the programming mode. In addition, it shall show up to three (3) incoming calls (the fourth line shows how many additional calls are in the queue). Programming menus, time schedules and complete system architecture can also be displayed when in the programming mode.

2.29 A Windows® based administrative software package to allow computer based access to all paging functions, including instantaneous distribution of pre recorded emergency messages shall be provided. The package shall utilize a point and click operation to allow music distribution to individual zones, manage any system controlled remote devices, manipulate schedules and paging groups as well as control time and clock functions. The software package shall be client-based to ensure that any programming changes are duplicated (backed up) in the computer for download. Equipment not providing a computer-based operational user interface to the paging system or using browser-based programming will not be acceptable.

2.30 The staff station call-in assembly shall be a momentary contact spring return type switch and an integral volume control mounted to a stainless steel single gang plate. This volume control shall compensate for varying room sizes and acoustical conditions. The call-in switch shall be capable of 7 different access levels:

2.30.1 Level 0 – Normal – Normal calls are initiated when activated.

2.30.1 Level 1 – Security – Allows activation of a common system relay.

2.30.1 Level 2 – Normal/Emergency calls – Normal calls are initiated by simply depressing the call-in switch. These stations can initiate an emergency call by depressing the call-in switch 4 times within 5 seconds. Emergency calls will display “HELP” on administrative displays and provide a special ring signal. This emergency call can be programmed to ring a special emergency phone.

2.30.1 Level 3 –Urgent/Emergency – Same as Level 2 except depressing the call switch once will initiate an “URGENT” call, which would be a higher priority than a “NORMAL” call.

2.30.1 Level 4 –Night – Allows for the ringing of the proper Administrative Telephone as well as all speakers in the building.

2.30.1 Level 5 – Emergency – Depressing the call switch will immediately place an emergency call.

2.30.1 Level 6 –Ignore – Allows the call switch to be bypassed while not affecting the staff station speaker.

2.31 The staff station speaker shall be an 8" dual cone design with a minimum frequency response of 30Hz-18kHz. It shall have a minimum voice coil diameter of 3/4" and be capable of handling 10 watts of program power. Any system requiring a line matching transformer for each staff station location shall use a transformer of such quality that a minimum frequency response of 60Hz-12kHz will be provided.

2.31.1 Classroom speakers shall be provided as indicated on drawings:  
Ceiling mounted with white round metal baffle designed to mount in separate back box. Back box shall be designed to

mount in industry standard drop ceiling. Provide back boxes and tile bridges for all speakers.

Wall mounted, surface design with sloped front. Box shall be gray with black baffle.

Self contained call-in intercom stations shall be vandal resistant with a stainless steel faceplate and mount in a 2 gang back box. This unit shall include a 45-ohm speaker and an integral call switch.

2.32 The hallway and other multi speaker areas shall use speakers with an 8" dual cone design with a minimum frequency response of 30Hz-18kHz. It shall have a minimum voice coil diameter of  $\frac{3}{4}$ " and be capable of handling 10 watts of program power. Multi purpose area speakers shall incorporate 25/70 volt speaker assemblies with line matching transformers.

2.32.1 Multi purpose area speakers shall be:

Ceiling mounted with white round metal baffle designed to mount in separate back box. Back box shall be designed to mount in industry standard drop ceiling. Provide back boxes and tile bridges for all speakers.

2.33 Weatherproof outside paging loudspeakers shall have a minimum power rating of fifteen (15) watts.

2.33.1 The speaker shall have a minimum frequency response of 275-14kHz and a dispersion angle of 120 x 60 degrees. It shall be surface mounted, capable of delivering five fifteen (15) watts and be rated for outside use.

2.33.2 The speaker shall have a minimum frequency response of 275-14kHz. It shall be flush mounted in a stainless steel vandal resistant enclosure. It shall be capable of delivering three (3) watts and be rated for outside use.

2.34 Provisions for the automatic distribution of paging announcements from a remote desk mounted microphone. Keying the microphone shall automatically mute all other audio sources and transmit the microphone signal to all rooms or specific groups of rooms as programmed into the system software.

2.35 Provide Program Monitor Assembly to preview audio material prior to distribution. Provide an antenna outside the rack to ensure proper reception on the FM band. Provide appropriate wall or desk rack mounting of this device as shown on drawings.

- 2.36 Provide impedance matching transformer for one way amplified Zones. There shall be one each for the hallways, outside horns, each gym, and the cafeteria.
- 2.37 Provide mixer amplifier for the cafeteria speakers the amplifier shall have a minimum of 3 inputs. This amplifier will be connected to the intercommunication system for pages and will have atleast one input from the cafeteria for in room announcements.
- 2.38 Provide individual amplifier channels for each of the one way paging zones. This amplifier shall have a minimum of 75 watts per channel with 70 volt or 25 volt outputs. The amplifier shall have gain controls for each channel to balance the separate paging zones.
- 2.39 Provide free standing enclosed rack with 35 rack spaces and low profile caster base. Rack should include 1 rack shelf for owner provided audio source and appropriate mounted power strip for all equipment housed in the rack. Use flanged blank panels to close in the open spaces in the rack.

#### **MASTER CLOCK**

- 2.38 Provide an integral Master Clock facilities shall be directly connected to the internal data bus structure of the Communication System allowing operation and programming under the same software package. Systems requiring a separate Master Clock assembly with a separate software program hardwired into the intercom component of the system will not be accepted. The Master Clock shall provide the following functions:
  - 2.38.1 Computer interface for on or off site programming.
  - 2.38.2 Capacity for 1024 events and up to 15 holidays.
  - 2.38.3 Events shall be programmable to any one or all of eight schedules to allow flexibility due to season, short day or special events.
  - 2.38.4 Fully automatic running schedules. Programming of specific schedule(s) to specific day(s).
  - 2.38.5 Capability of reviewing, editing or deleting events.
  - 2.38.6 Facilities for automatic distribution of program material during class change periods.
  - 2.38.7 Crystal controlled time base for accuracy.
  - 2.38.8 Super Cap for back up of time keeping function. Systems requiring batteries for basic memory storage will not be accepted.

### PART 3 CABLES

- 3.0 All new cable shall be listed for the intended purpose. Use CAT 3/5/5e/6, 24AWG, U.L. Listed cable. Home run all station wiring in individually jacketed cables. Number of pairs within the cable may vary due to specific field conditions.
- 3.1 All interior staff station wiring shall be in accordance with current new construction wiring guidelines published by the manufacturer, including staff speaker and call switch.
- 3.2 All interior Administrative phone(s) shall be wired in accordance with current new construction wiring guidelines published by the manufacturer.
- 3.3 All operator displays shall be connected to the system in accordance with current new construction wiring guidelines published by the manufacturer.
- 3.4 All power amplified speaker circuits shall be connected using one twisted pairs 18ga min in an overall jack.
- 3.5 All constant voltage speaker circuits shall be connected using a separate twisted shielded pair. Refer to drawings for proper wire gauge.
- 3.6 Transient suppression is required on all wiring leaving the building.
- 3.7 All cables run in underground conduits must be suited for wet locations.

### PART 4 INSTALLATION

- 4.0 Complete system shall be installed in strict accordance with the recommendation of the manufacturers as approved by the Architect, anchoring all components firmly into position or long life under hard use.
- 4.1 System equipment locations shown on the Drawings are approximate. Verify exact location s in the field and coordinate these with the Architect.
- 4.2 After the systems have been completely tested, the cables between the sound system equipment cabinet conduit access boxes and the sound system equipment cabinets shall be neatly bundled and held with either nylon lacing cord or nylon cable clamping devices similar to Thomas & Betts "Ty-Rap". More than one bundle may be used if one bundle would be too large to be workable. Provide sufficient loop in the bundle to allow moving the equipment cabinets away from the wall for servicing. Cable bundle(s) shall be securely attached to the equipment.

### PART 5 INSPECTIONS AND TEST UPON COMPLETION

- 5.0 Check out of the installation shall be made by the contractor. The system shall be free of short circuits, ground loops, parasitic oscillations, excessive system noise and hum, and instability. The Contractor shall, at his own expense, make any changes required to meet these performance requirements.

- 5.1 Check-out and final connections to the system shall be made by a factory trained technician in the employ of a manufacturer of the products installed. In addition, factory trained technicians shall demonstrate operation of the complete system and each major component to the Owner.
- 5.2 System field wiring diagrams shall be provided to this subcontractor by the system manufacturer prior to installation.
- 5.3 All materials and installation shall be guaranteed to be free of defects in material and workmanship for one year after final acceptance of installation and test.
- 5.4 Upon completion of the installation, four (4) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational manuals have been received.
- 5.5 Upon completion of the installation of the equipment, the electrical contractor shall provide to the engineer a signed statement from the equipment supplier that the system has been wired, tested, and functions properly according to the specifications.
- 5.6 Nothing herein contained shall be construed to relieve the Contractor from furnishing a complete and acceptable electrical wiring system in all its categories. The engineer will condemn and reject any materials or labor which are or may become detrimental to the accomplishment of the intentions of these specifications.

## LOWER LEVEL DOOR SCHEDULE

DR. NO.	DOOR/OPENINGS			FRAME		DETAIL		HARDWARE SET	REMARKS
	SIZE	MAT'L	ELEV	MAT'L	ELEV	JAMB	HEAD		
O1A	3'-0" x 8'-0" x 1 3/4"	ALUM.	D3	ALUM.	F4	J5	H5	{ 1.0 }	
O1B	3'-0" x 8'-0" x 1 3/4"	ALUM.	D3	ALUM.	F4	J5	H5	{ 1.0 }	
O1C	3'-0" x 8'-0" x 1 3/4"	ALUM.	D3	ALUM.	F3	J6	H6	{ 3.0 }	
O1D	3'-0" x 8'-0" x 1 3/4"	ALUM.	D3	ALUM.	F3	J6	H6	{ 3.0 }	
O2A	PR 3'-0" x 6'-8" x 1 3/4"	WOOD	D1	H.M.	F1	J4	H4	{ 2.0 }	1, 90 MIN. FIRE RATING
O2B	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 4.0 }	2 { 2 }
O3	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
O4	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
O5	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 6.0 }	
O6	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 7.0 }	
O9A	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
O9B	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
10	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
11	3'-0" x 7'-0" x 1 3/4"	H.M.	D2	H.M.	F1	J2	H2	{ 9.0 }	
14	PR 3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 8.0 }	
14A	PR 3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 8.0 }	
15	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 7.0 }	
17	PR 3'-0" x 7'-0" x 1 3/4"	H.M.	D1	H.M.	F1	J2	H2	{ 10.0 }	
21	PR 3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 2.0 }	1 { 2 }

REMARKS:

1. INSTALL FIRE-RATED WIRED-GLASS VISION LITE { 2 }
2. INSTALL NON-RATED TEMPERED SAFETY GLASS VISION LITE

## FIRST FLOOR DOOR SCHEDULE

DR. NO.	DOOR/OPENINGS			FRAME		DETAIL		HARDWARE SET	REMARKS
	SIZE	MAT'L	ELEV	MAT'L	ELEV	JAMB	HEAD		
101	PR 3'-0" x 6'-8" x 1 3/4"	WOOD	D1	H.M.	F1	J4	H4	{ 2.0 }	1, 90 MIN. FIRE RATING
102	3'-6" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 11.0 }	{ 10 MIN. FIRE RATING }
103	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 5.0 }	
104A	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 12.0 }	DUTCH DOOR
104B	6'-0" x 6'-0" x 1"	STEEL	D4	STEEL	-	J3	H3		
106	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 7.0 }	
107	3'-0" x 7'-0" x 1 3/4"	WOOD	D1	H.M.	F2	J1	H1	{ 2.0 }	

REMARKS: R = RELOCATED

1. INSTALL FIRE-RATED WIRED-GLASS VISION LITE { 2 }

### ADDENDUM NO. 02

EVANSVILLE VANDERBURGH SCHOOL CORPORATION

PERRY HEIGHTS MIDDLE SCHOOL GYMNASIUM ADDITION  
5800 HOGUE ROAD  
EVANSVILLE, IN 47712

DATE: 8/02/2013  
SCALE: NTS  
DRAWN: FMF  
CHECKED: FMF  
PROJ. #: 2009.00503